KORTE BIJDRAGEN

WATERBIRDS WITH BROKEN HEARTS: THREE CASES OF RUPTURED VENTRICLES

WATERVOGELS MET EEN GEBROKEN HART: DRIE GEVALLEN VAN GESCHEURDE HARTKAMERS

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Tijdens dissecties van meer dan 3000 watervogels die waren verhongerd, verdronken of verongelukt (vuurtoren- en vangstslachtoffers), was het ons geen enkele keer opgevallen dat een hart was beschadigd. Hier presenteren we echter drie gevallen van watervogels met een 'gebroken hart'. Zowel bij een Grote Fuut uit Argentinië, als een Brilduiker en een Kleine Alk uit Nederland, was de (rechter) ventrikel gescheurd. In alle drie de gevallen waren de vogels aan de buitenkant onbeschadigd maar bleken ze toch verschillende botbreuken te hebben. Dit zou er op kunnen wijzen dat ze op een geweldadige manier aan hun einde kwamen. In het geval van de Grote Fuut zijn we er vrijwel zeker van dat er met hem is gespeeld door een van de talrijke aanwezige Patagonische Zeeleeuwen. Om te komen tot een beter begrip van deze merkwaardige doodsoorzaak zou het lonen om een volgende keer de gescheurde harten op 4% formaline te bewaren voor onderzoek door veterinaire specialisten.

The heart is a critically important an a very active organ (e.g. Vogel 1992) that has been subject to considerable study in birds (e.g. Sturkie 1986, Jones & Johansen 1972). Rupture of the muscular wall of hearts has rarely been reported (J.E. Cooper pers. comm.; but see von Numers 1991). In this note we present three examples to alert ornithologists and wildlife biologists to the possibility. Better described cases of this trauma (on the basis of formalin-preserved tissue allowing histopathology, for example) might help to elucidate any common pathological background and their biological significance.

On 19 March 1997, a Great Grebe *Podiceps major* was collected freshly dead, drifting on the sea-surface just offshore at Playa Fracaso, Golfo San José, Peninsula Valdès, Chubut, Argentina, where we picked it up from an inflatable boat. When taken from the water the bird leaked blood from its mouth and its right wing appeared broken. It was an adult male weighing 1550g, that

probably belonged to the tens of grebes that were seen near Playa Fracaso during the previous days. We felt that it had died as a result of being played with by one of the many Southern Sea Lions *Otaria flavescens* in this area. The grebe was examined in detail and dissected later that day. Apart from the broken wing there were no visible external injuries. When the bird was skinned, no damage was noticed and only when the intact sternum was removed did we notice that there was a lot of blood in the thoracic cavity, and also a severely ruptured heart. The wall of the right ventricle had a 1.5 cm rupture at the ventral aspect, about one third from the apex along the cranio-caudal axis.

Another observation of a ruptured heart was in a juvenile male Goldeneye *Bucephala clangula* found freshly dead on 15 January 1997 along the dyke bordering the North Sea at Den Helder, The Netherlands. It was not weighed but appeared in good physical condition and showed no visible external injuries. After removal of the skin, it appeared that the cranial part of the right pelvis was broken. Upon further dissection, the thorax was filled with unclotted blood coming from the heart that was ruptured along the ventral aspect. Other organs in the body cavity had a healthy appearance.

Finally, in December 1997, a Little Auk *Alle alle* (a seabird with a northern distribution and a rarity in The Netherlands; Winter *et al.* 1996) was found inland in a field near Irnsum, Friesland, about 50 km from the North Sea. The female was freshly dead and weighed 106 g. This is rather light, as a sample of fresh bodies of female Little Auks from Dutch shores showed a body mass range of 105-145g (average 118g; C.J. Camphuysen *pers. comm.*). No external wounds were detected. After removing the skin, a haemorrhage was seen on the right side within the abdominal cavity. There was no abdominal or subcutaneous fat, but the pectoral muscles appeared relatively thick. Almost all thoracic and abdominal organs had a dark-red color, but they otherwise looked healthy. The right ventricle was ruptured along its longitudinal axis. After removing the horny layer of the beak it was discovered that the lower mandible was broken.

During the compositional analyses of over 1200 shorebird carcasses (lighthouse, frost and catching casualties) and about 1800 corpses of drowned grebes (TP), and during the dissection of frost victims and other undamaged corpses of over 60 miscellaneous bird species (PJCH), we had never noticed any ruptured hearts. Due to field conditions, and our inexperience with the phenomenon, none of the 'broken hearts' was collected for further examination. It is, therefore, impossible to presently report on the histological and micro-anatomical details of the damaged ventricle walls. That all three

birds appeared undamaged externally but internally showed broken bones, suggests traumatic and violent causes of death. Would it be possible that ventricle walls might break during violent events (e.g. upon sudden attack) as a result of a raised blood-pressure? In such cases the aorta would be a more likely place for ruptures, and indeed, such aortic ruptures are well known in domestic birds (Krista *et al.* 1970, Sturkie 1986; G.M. Dorrestein pers. comm.). Or could the ventricle walls have been weakened as a consequence of an inflammatory and degenerative condition of the cardiac tissue (e.g. Ritchie *et al.* 1994), increasing the likelihood of rupture of the ventricle walls in case of undue stress?

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